

REMARKS

Claims 17-28 are pending in the application. Claims 12-14 have been held withdrawn as being drawn to a non-elected invention. Claims 1-11, 15 and 16 have been canceled without prejudice or disclaimer. Claims 17-28 are newly added. Reconsideration of this application is respectfully requested.

The Office Action has objected to the drawing because Figures 1 and 2 should be labeled with the legend, "Prior Art". A replacement sheet is submitted herewith that contains the legend "Prior Art" for Figures 1 and 2, subject to the approval of the Examiner. Therefore, it is submitted that the objection to the drawing is obviated.

The Office Action rejects claims 1-3 under the second paragraph of 35 U.S.C. 112 as indefinite. This rejection is moot because claims 1-3 have been canceled.

The Office Action rejects claims 1-11 and 15 under 35 U.S.C. 102(b) as anticipated by Japanese Patent Application No. 10-252084 to Takumi, hereafter Takumi. This rejection is moot because claims 1-11 and 15 have been canceled.

The Office Action rejects claims 1-6, 9-11 and 15 under 35 U.S.C. 102(b) as anticipated by Japanese Patent No. 05116789 to Takahashi, hereafter Takahashi. This rejection is moot because claims 1-6, 9-11 and 15 have been canceled.

The Office Action rejects claims 1-6, 9-11 and 15 under 35 U.S.C. 102(b) as anticipated by Japanese Patent Application No. JP-09-139726 (not 09-13726 as stated in paragraph 5) to Shibata, hereafter Shibata. This rejection is moot because claims 1-6, 9-11 and 15 have been canceled.

The Office Action rejects claims 1-6, 9-11 and 15 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 4,773,143 to Okamura et al., hereafter Okamura. This rejection is moot because claims 1-6, 9-11 and 15 have been canceled.

The Office Action rejects claims 1-6, 9-11 and 15 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 1,576,726 to Davis, hereafter Davis. This rejection is moot because claims 1-6, 9-11 and 15 have been canceled.

The Office Action rejects claims 1-6, 9-11 and 15 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 2,404,159 (not 5,404,159 as stated in paragraph 8) to Barber, hereafter Barber. This rejection is moot because claims 1-6, 9-11 and 15 have been canceled.

The Office Action rejects claims 1-11 and 15 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 5,421,259 to Shiba et al., hereafter Shiba. This rejection is moot because claims 1-11 and 15 have been canceled.

The Office Action rejects claims 1-11 and 15 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 5,188,273 to Schmooock, hereafter Schmooock. This rejection is moot because claims 1-11 and 15 have been canceled.

The Office Action rejects claims 1, 15 and 16 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 2,052,566 to Haines, hereafter Haines. This rejection is moot because claims 1, 15 and 16 have been canceled.

The Office Action rejects claim 15 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 5,645,361 to Mitsushima et al., hereafter Mitsushima. This rejection is moot because claim 15 has been canceled.

The Office Action rejects claim 16 under 35 U.S.C 103(a) as unpatentable over either Takumi or Shibata, taken separately. This rejection is moot because claim 16 has been canceled.

The Office Action cites a number of patents that were not applied in the rejections of the claims. These patents have been reviewed, but are believed to be inapplicable to the claims.

Newly presented claims 17-28 are distinguished from the cited references for the reasons set forth below.

Claim 17 is based on original claim 1, but has been amended to take into account the Examiner's comments. In particular, claim 17 has been clarified by referring to a "line of engagement" between the raised portion of the roller element and the media. This feature, which is shared with the helical arrangements of the prior art, relates to the fact that the line of engagement moves axially, while the actual line on the roller element is at different successive circumferential positions on the raised portion of the surface at successive moments in time.

The present invention has been distinguished from the prior art documents in that the raised region forms a closed loop around the circumference of the roller element. This has the advantage of there being no net lateral movement of the print media during each revolution of the roller element while local lateral expansion is still permitted. The continuous helical arrangements disclosed in the prior art documents cited by the Examiner have the disadvantage already identified in the present specification, namely that a continuous helix has the tendency to move the paper or other media laterally. Even changing the hand of the helix at the centre has the disadvantage of introducing an unwanted discontinuity into the feed of the media. All such continuous helical arrangements are now specifically excluded from the scope of the amended main

claim by limiting it to a raised portion, which forms a closed loop around the circumference of the roller element.

Thus with reference to paragraph 3 of the Office Action, Takumi discloses a roller of the type with two helices of opposite hands meeting in the middle. As stated above, the relatively long helices tend to move the paper laterally and there is a discontinuity in the middle, which can lead to deterioration in print quality.

Regarding paragraph 4, Takahashi discloses a roller comprising a single helical portion. As stated above, this tends to move the paper or other media laterally, which is a drawback since a straight feed of the media is required.

With reference to paragraph 5 of the Office Action, Shibata discloses a similar arrangement to Takumi and the same remarks apply.

With regard to paragraph 6, Okamura discloses a roller element of a completely different type. The purpose of this roller element is to apply ink or other medium as evenly as possible over a surface with which it is in contact. Accordingly, each belt-like line 112 shown in Figure 5 for example, is not “a raised portion” but is flush with the remainder of the surface of the roller element. The belts 112, which are harder than the soft material 111 which forms the rest of the surface, are provided to limit the wear on an associated doctor blade. The belts 12 are not provided to produce a different type of engagement from the soft portions 11 with any media with which they come into contact. The following passages in Okamura illustrate that belts in the form of raised portions would be contrary to the disclosure of the document and to the purpose of the roller described therein:

The roller for supplying a constant amount of liquid (col. 1, lines 17-18).

In order to eliminate the non-uniform distribution of the liquid on the roller
(col. 1, lines 42-43)

-- it is possible to continue stable supply of necessary and
sufficient liquid--" (col. 2 lines 42-43).

In respect of paragraph 7, Davis discloses a helical arrangement similar to
that of Takahashi and the same distinction applies.

With regard to paragraph 8, Barber also discloses a helical arrangement,
from which the present invention has now been distinguished.

In respect of paragraph 9 of the Office Action, Shiba discloses roller
arrangements with a single helix or two opposed helices. For the reasons
previously-stated, the present invention has now been clearly distinguished from
such arrangements.

With regard to paragraph 10, Schmooch also discloses a roller
arrangement with two helices meeting in the middle. As before, the raised
portions do not constitute a closed loop around the circumference of the roller
element.

With reference to paragraph 11, the embodiment of Haines identified by
the Examiner has isolated buttons 12, which do not have a line of engagement
as required by new independent claim 17. Because of the buttons, the surface of
the roller 11 is not in continuous contact with the media, which is desired to retain
optimum control.


With regard to paragraph 12, the roller of Mitsushima also lacks a line of
engagement with the media having the features and advantages of new
independent claim 17.

Accordingly, it is submitted that new independent claim 17 is allowable for the above reasons and that dependent claims 18 to 28 are also allowable since they are dependent on an allowable independent claim.

It is respectfully requested for the reasons set forth above that the objection to the drawing be withdrawn, that the rejections under 35 U.S.C. 112, 35 U.S.C. 102(b) and 35 U.S.C. 103(a) be withdrawn, that claims 17-28 be allowed and that this application be passed to issue.

Respectfully Submitted,

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IN THE DRAWING:

Please replace the original drawing sheet that contains Figures 1-4 with the attached replacement sheet in which Figures 1 and 2 have been amended to bear the legend "Prior Art".